

METHOD AND APPARATUS FOR SCHEDULING SWITCHED
MULTIBEAM ANTENNAS IN A MULTIPLE ACCESS ENVIRONMENT

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Abstract of the Invention

5 The invention is a switched beam beamforming method and
apparatus for wireless communication receiving stations
utilizing an array of antenna elements in which only a single
beam is generated at any given instant and the beam is
switched at a very high rate, e.g., faster than the data rate
of the system. An algorithm for scheduling the beamforming
sequence is disclosed that optimizes performance by optimizing
the signal/interference-plus-noise ratio for a given set of
conditions at any instant in time. In particular, spatial
diversity offered by antenna arrays for direct sequence-code
division multiple access communication systems is exploited by
an intelligent switched beam antenna at radio frequency level.
The design is optimized to yield conditional mean estimates of
the communication channel during uplink transmission and
compute minimum variance estimates of the communication
channel by optimally combining the signals of the spatially
20 distributed antennas at chip rate.